



## Before-school running/walking club: Effects on student on-task behavior

Michalis Stylianou<sup>a,\*</sup>, Pamela Hodges Kulinna<sup>b</sup>, Hans van der Mars<sup>b</sup>, Matthew T. Mahar<sup>c</sup>,  
Marc A. Adams<sup>d</sup>, Eric Amazeen<sup>e</sup>

<sup>a</sup> School of Human Movement and Nutrition Sciences, The University of Queensland, St Lucia, Queensland 4072, Australia

<sup>b</sup> Mary Lou Fulton Teachers College, Arizona State University, Mesa, AZ 85212, USA

<sup>c</sup> Department of Kinesiology, East Carolina University, Greenville, NC 27858, USA

<sup>d</sup> School of Nutrition and Health Promotion, Arizona State University, Phoenix, AZ 85004, USA

<sup>e</sup> Department of Psychology, Arizona State University, Tempe, AZ 85281, USA

### ARTICLE INFO

Available online 1 February 2016

#### Keywords:

Physical activity program  
Classroom behavior  
Elementary school

### ABSTRACT

Before-school programs provide a good opportunity for children to engage in physical activity (PA) as well as improve their readiness to learn. The purpose of this study was to examine the effect of a before-school running/walking club on elementary school children's on-task behavior. The study employed a two-phase experimental design with an initial baseline phase followed by an alternating treatments phase, and was first conducted at a private school (School A) and subsequently replicated at a public school (School B). Participants were third and fourth grade children from two schools in the Southwestern U.S. who participated in a before-school running/walking club that met two times each week (School A: 20 min; School B: 15 min) during the 2013/2014 academic year. Participation in the program was monitored using pedometers and on-task behavior was assessed through direct observation. Data analyses included visual analysis, Tau-U index, and multilevel modeling. Results from all analyses indicated that on-task behavior was significantly higher on days the children attended the before-school program than on days they did not. According to multilevel modeling results, mean differences and effect sizes were: School A = 15.78%,  $pseudo-R^2 = .34$  [strong effect]; School B = 14.26%,  $pseudo-R^2 = .22$  [moderate effect]. Results provide evidence for the positive impact of before-school PA programs on children's classroom behavior and readiness to learn. Such programs do not take time away from academics and may be an attractive option for schools. Results also have implications for the structure of children's school day and the scheduling of PA opportunities.

© 2016 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Introduction

Physical activity (PA) is associated with extensive health benefits (Janssen and LeBlanc, 2010), but a large proportion of American youth do not meet the national PA guidelines (National Physical Activity Plan Alliance, 2014; Troiano et al., 2008). Schools have been identified as primary sites for PA promotion (IOM, 2013), but most of the time youth spend in school is sedentary and PA opportunities in U.S. schools have decreased as a result of the current economic conditions and the heavy emphasis on improving academic performance (CEP, 2008; NASPE and AHA, 2012).

Beyond the health benefits of PA, school-based PA opportunities may also improve students' classroom behavior, cognition, and academic achievement (CDC, 2010; Mahar, 2011; Sibley and Ethier, 2003).

Research in this area “is needed to justify the incorporation of physical activity in school settings, especially to teachers and administrators” (Mahar et al., 2006, p. 2086). Indeed, even when teachers and administrators are aware of the health benefits of PA, they may be hesitant to introduce/increase PA opportunities throughout the school day because of pressures to improve academic performance (CEP, 2008; Cothran et al., 2010). Demonstrating the cognitive, academic, and classroom behavior benefits of PA may alleviate some of their concerns and lead to additional PA opportunities throughout the school day.

A possible co-benefit of school PA participation is classroom behavior improvement. Classroom behavior involves various behaviors that may impact student adjustment (e.g., attitude towards school; relationships with students and teachers) and academic performance (CDC, 2010), such as time on/off-task. Acute bouts of PA, including recess (Barros et al., 2009; Jarrett et al., 1998; Pellegrini et al., 1995; Ridgway et al., 2003), classroom PA (Goh et al., 2012; Mahar et al., 2006), and before-school PA (Mahar et al., 2011), have been shown to positively impact different types of classroom behavior.

\* Corresponding author.

E-mail addresses: [m.stylianou@uq.edu.au](mailto:m.stylianou@uq.edu.au) (M. Stylianou), [pkulinna@asu.edu](mailto:pkulinna@asu.edu) (P.H. Kulinna), [Hans.vanderMars@asu.edu](mailto:Hans.vanderMars@asu.edu) (H. van der Mars), [MAHARM@ecu.edu](mailto:MAHARM@ecu.edu) (M.T. Mahar), [Marc.Adams@asu.edu](mailto:Marc.Adams@asu.edu) (M.A. Adams), [Eric.Amazeen@asu.edu](mailto:Eric.Amazeen@asu.edu) (E. Amazeen).

Although the mechanism underlying the relationship between PA and classroom behavior is unclear, there is evidence that acute bouts of PA positively influence students' cognitive processes, and particularly executive functioning (e.g., Hillman et al., 2009), which involves processes that make it possible to stay focused (Diamond, 2013). Children who have difficulties with executive functioning are less likely to be able to stay on task in the classroom and succeed academically (St Clair-Thompson and Gathercole, 2006). It is likely, therefore, that improvements in executive functioning mediate the relationship between PA and on-task behavior.

Before-school PA programs can potentially improve students' readiness to learn without taking time away from academics. However, research in this area is limited. Although preliminary evidence suggests that participation in a before-school program using an interactive multi-media PA training system (i.e., that uses DVR technology to engage children in PA) can benefit children's on-task behavior (Mahar et al., 2011), that specific intervention required a significant financial investment, which may make it an unfeasible option for many schools. Hence, this study's purpose was to examine whether elementary school children's on-task behavior during the first 45 min of instruction improved on days they participated in a before-school running/walking club.

## Methods

### Participants and settings

Participants were third and fourth grade students from two schools in the Southwestern U.S. Schools were purposively selected and represented two different settings (i.e., private and public). The goal was to replicate the study across the two settings rather than compare the two schools.

#### School A

School A was a high-achieving K-8 private school (over 95% of students meeting/exceeding standards in 2014–2015 state standardized testing for English Language Arts, Math, and Science), with a total enrollment of 273 students (primarily Caucasian) and an average class size of 18 students. The teachers of the four participating classes (all Caucasian) had a mean teaching experience of 11.50 years ( $SD = 6.14$  years).

#### School B

School B was an average-performing K-6 public school (26%, 35%, and 60% of students meeting/exceeding standards in 2014–2015 state standardized testing for English Language Arts, Math, and Science, respectively), with a total enrollment of 451 students (57.43% Caucasian, 33.92% Hispanic, 8.65% other) and an average class size of 30 students. Approximately 60% of this school's students were eligible for free or reduced-price lunch. The teachers of the participating classes (Caucasian = 3; Hispanic = 1) had a mean teaching experience of 21.75 years ( $SD = 9.03$  years).

### Target behavior

The target behavior was students' on-task behavior during the first 45 min of instruction. Consistent with Mahar et al.'s (2006) definitions, *on-task behavior* was defined as behavior that followed the class rules and was appropriate to the learning situation (e.g., listening to directions, working quietly at one's desk). *Off-task behavior* was defined as any behavior that was not on task (i.e., broke the classroom rules or interrupted the learning situation; making noise, not participating when necessary, staring into space).

### Research design

This study used an alternating treatments design (ATD) (Cooper et al., 2007) with an initial baseline phase. ATDs test the relative effectiveness of two (or more) treatments/conditions and originate from Applied Behavior Analysis and single-case designs (Barlow and Hersen, 1984; Cooper et al., 2007). In ATDs, participants receive both treatments/conditions (i.e., a person/group serves as its own control) on an alternating schedule, which helps control for most threats against internal validity (Barlow and Hersen, 1984). The addition of the baseline phase serves to establish a counterfactual, determines the level of stability in behavior, and helps control for regression to the mean as well as for testing effects.

### Phases, conditions, and data points

The two conditions compared during the AT phase included a non-treatment (no program as in baseline phase) and a treatment condition. The baseline phase for both schools included five data points (over a week for School A; over two weeks for School B). The AT phase included five data points for each condition (10 total over five weeks) at each school. The number of data points for each phase was determined based on the minimum number required (i.e., two for each condition; Barlow and Hersen, 1984) and practical considerations (i.e., predetermined program starting day, limited program duration, natural school breaks). It was expected that the two phases would be adequate to reveal potential condition differences.

### Condition sequencing and discrete conditions

The before-school program for each school occurred on specific weekdays, which did not allow randomly counterbalancing the two conditions. However, the non-treatment data points were manipulated so they occurred both on days before and after the treatment data points (at least two times before and two times after). This, combined with the clearly discrete nature of the two conditions (i.e., non-treatment vs. treatment), helped control for potential order effects and minimized possible carryover effects (Barlow and Hersen, 1984).

### Intervention: before-school physical activity program

The before-school program in both schools involved an unstructured running/walking club that took place twice a week (Tuesdays and Thursdays) on each school's oval/field and was supervised by each school's physical education teacher. Students were instructed that they could either walk or run for the duration of the program. On program days in both schools, students went straight to their classrooms at the end of the program to complete their morning work.

#### School A

At School A, the program lasted 20 min, from 7:50 am to 8:10 am, and classes officially started at 8:30. On days without the program, students arrived to school around 8:00 and the period between 8:00 and 8:30 was homeroom time during which students got ready and completed morning work.

#### School B

At School B, the program lasted 15 min, from 7:20 am to 7:35 am, and classes officially started at 8:00. Students were not allowed on campus before 7:20 and the period between 7:40 and 8:00 was considered homeroom time.

### Data collection & procedures

Institutional Review Board, district, principal, and teacher approvals were obtained prior to starting the study. Also, student assent and parental consent forms were collected. Data were collected on:

Download English Version:

<https://daneshyari.com/en/article/4202347>

Download Persian Version:

<https://daneshyari.com/article/4202347>

[Daneshyari.com](https://daneshyari.com)